

REMARKS

Applicants respectfully request reconsideration and allowance of the present application in view of the foregoing amendments and following remarks. By this Amendment, claims 2 and 4 have been amended. The drawings and specification have also been amended to correct certain informalities. Following entry of this amendment, claims 1-5 will be pending in the application, of which claims 1, 3 and 5 are independent claims.

IN THE DRAWINGS

Applicants provide, as an attachment to this response, replacement sheets and marked-up versions of the original drawings.

Objections to the Drawings

In the Office Action, the examiner objected to the drawings because certain elements of the drawing appeared to be missing or incorrectly labeled. Applicants have attached replacement sheets 1-9 that more clearly show the missing components. Original drawing sheet 10 is not amended in this response. The amended replacement sheets substitute hatching for coloration to better differentiate elements of the Figures. In particular, as a result of the amendments to the drawings and specification:

- first sacrificial layer 30 and second sacrificial layer 40 are more clearly delineated in the replacement drawings than in the original black and white copies of the original drawings;
- primary air gap 102 and secondary air gap 106 are more clearly illustrated;
- recessed electrode 104 is more clearly indicated by addition of arrow to associated lead line and by relocation of reference numeral 104; and
- cut-out 70, Via 60 and beam oxide 50 are more clearly differentiated.

Objections to the Abstract

In the Office Action, the examiner objected to the form of the Abstract. By this amendment, Applicants amend the Abstract such that it is now in narrative form and has a word

count within the range of 50 – 150 words. Applicants submit that the Abstract as amended is in proper form and request withdrawal of the objection.

Claim Rejections Under 35 U.S.C. § 112 (Second Paragraph)

Claims 2 and 4 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office action questions the meaning of “a distance less than the movable electrode.” In this response, Applicants have amended claims 2 and 4 and Applicants respectfully submit that the grounds for rejection are rendered moot. Therefore, Applicants request withdrawal of the rejection.

Claim Rejections Under 35 U.S.C. § 102

In the Office Action, claims 1-5 stand rejected under 35 U.S.C. 102(e) as allegedly being anticipated by U.S. Patent No. 6,746,891 to Cunningham et al. (Cunningham). For reasons set forth below, Applicants respectfully traverse this rejection.

In rejecting each of claims 1-5, the Office Action relies on Figure 1v of Cunningham. Figure 2 of Cunningham is also referenced in rejecting independent claims 1 and 3 and, presumably, also in claim 5. Analysis of Figures 1v and 2 and the associated disclosure clearly show that Cunningham does not anticipate each and every element of independent claims 1, 3 and 5 nor of the dependent claims 2 and 4.

Independent Claims 1, 3 and 5 Patentably Define Over Cunningham

The Office Action alleges that Cunningham discloses an actuator having a recessed movable electrode. Applicants respectfully disagree. According to Cunningham, Figure 1v shows a fabricated MEMS switch having a trilayered beam (col. 7, lines 14-15). Clearly missing from the drawing and absent from the Cunningham specification is a movable electrode attached within the recess as recited in independent claims 1, 3 and 5 of the present invention. Cunningham provides a movable electrode 138 in Figure 1v, but does not teach or disclose a movable electrode attached within a recess as recited in claims 1, 3 and 5. (By contrast, one possible implementation of a movable electrode attached within a recess as recited in claims 1, 3 and 5 is illustrated in Figure 19 of the present application.)

In summary then, Cunningham does not provide a resilient structural layer including a first end fixed with respect to the substrate, a second end suspended over the substrate, and a surface *having a recess formed therein*, as recited in independent claims 1, 3 and 5. Nor does Cunningham provide the movable electrode attached *within the recess*, as recited by independent claims 1, 3 and 5. For at least these reasons, the rejections of independent claims 1, 3 and 5 should be withdrawn.

Dependent Claims 2 and 4 Further Patentably Define Over Cunningham

As amended, claims 2 and 4 depend from claims 1 and 3, respectively and are patentable for at least the foregoing reasons. Claims 2 and 4 further require that the movable electrode is attached within the recess of the resilient structural layer whereby a first portion of the movable electrode is separated from the substrate by a distance less than the distance separating a second portion of the movable electrode from the substrate.

Figure 19 of the present application shows an example of a recessed electrode 104 in Figure 19. It will be appreciated by one skilled in the art that the movable electrode 104 has at least two portions, distinguishable by the size of air gap 102 and 106 separating the portions from stationary electrode 26 (see also, Specification at page 9, lines 10-21).

Cunningham provides no such teaching and cannot be said to anticipate the structure of the claimed recessed movable electrode or the advantages derived therefrom (see present application at page 10, lines 12-17): Cunningham merely provides a movable electrode 138 that is separated by a uniform gap from a stationary electrode 134 at rest (Figure 1v).

Therefore, for at these reasons, Applicants respectfully request withdrawal of the rejections of dependent claims 2 and 4 because Cunningham does not anticipate or suggest each and every element of these claims.

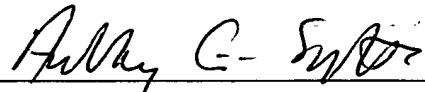
Conclusion

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition of allowance and a Notice to that effect is earnestly solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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Dated: April 14, 2005.



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ANNOTATED SHEET

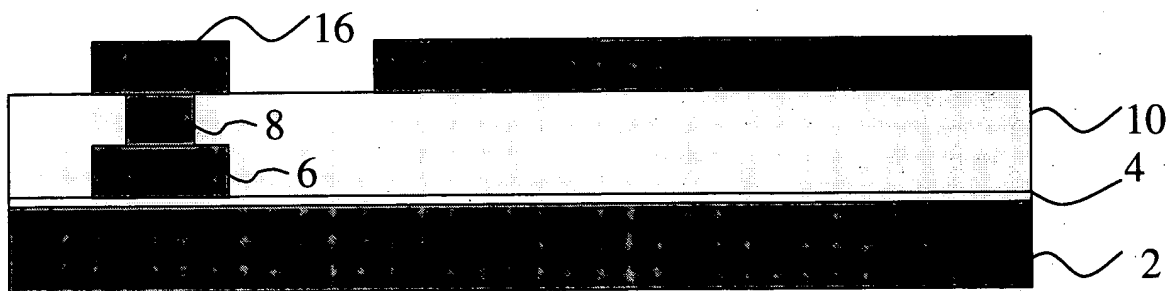


Figure 7

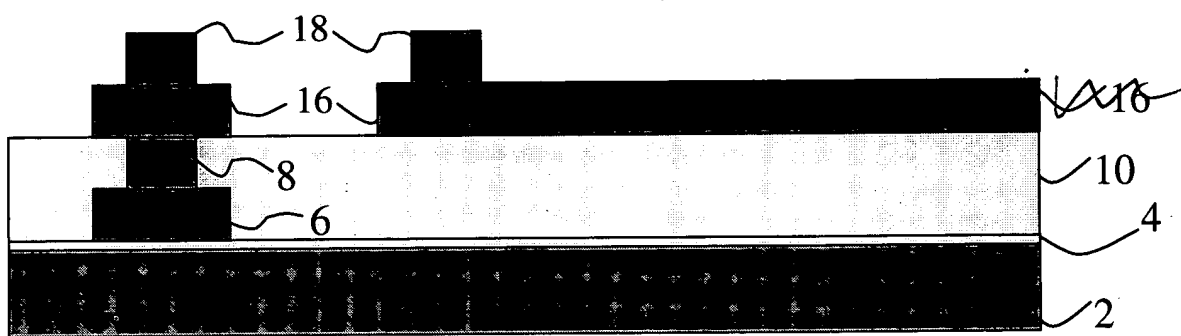


Figure 8

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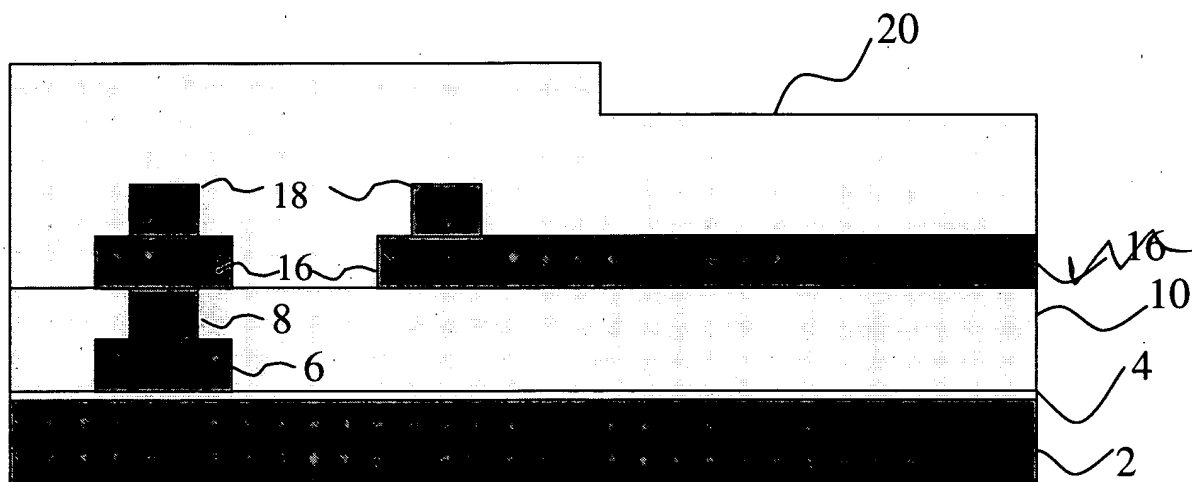


Figure 9

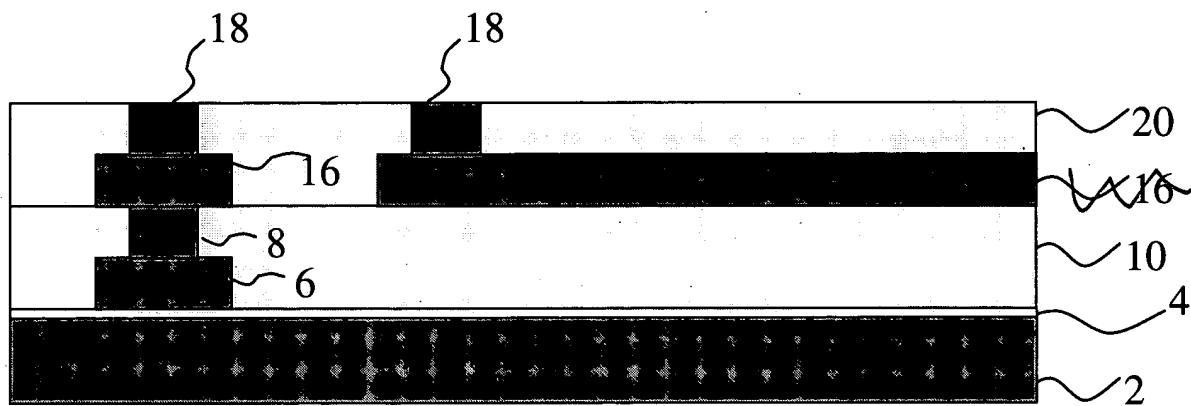


Figure 10

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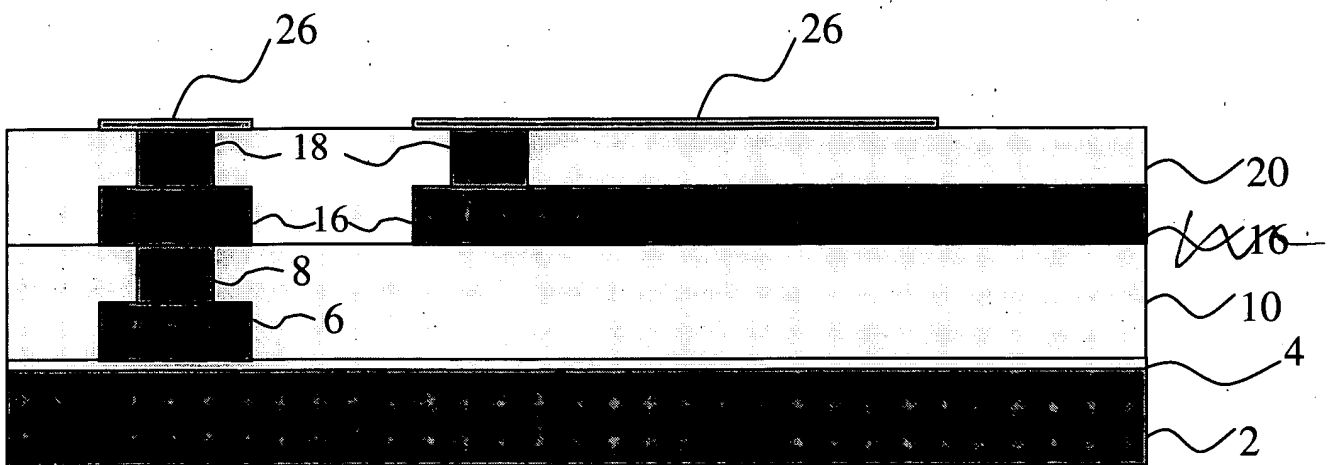


Figure 11

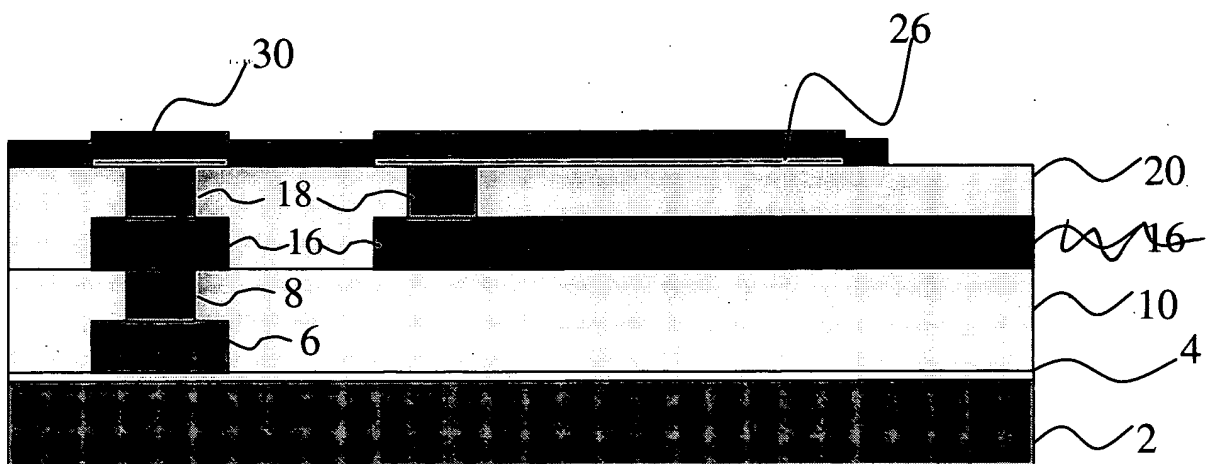


Figure 12

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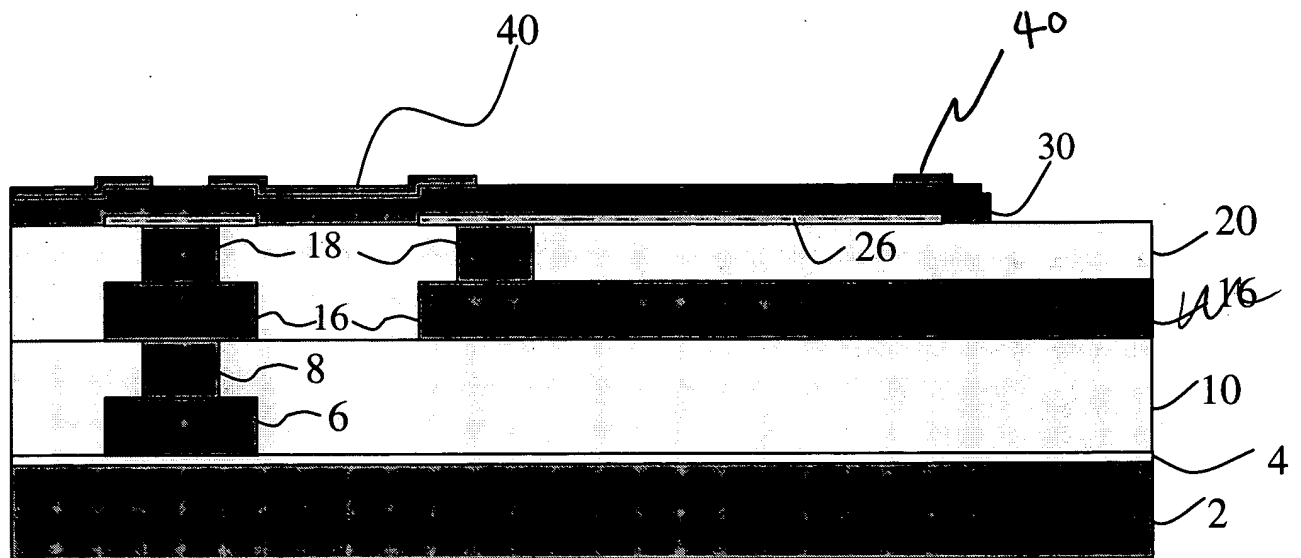


Figure 13

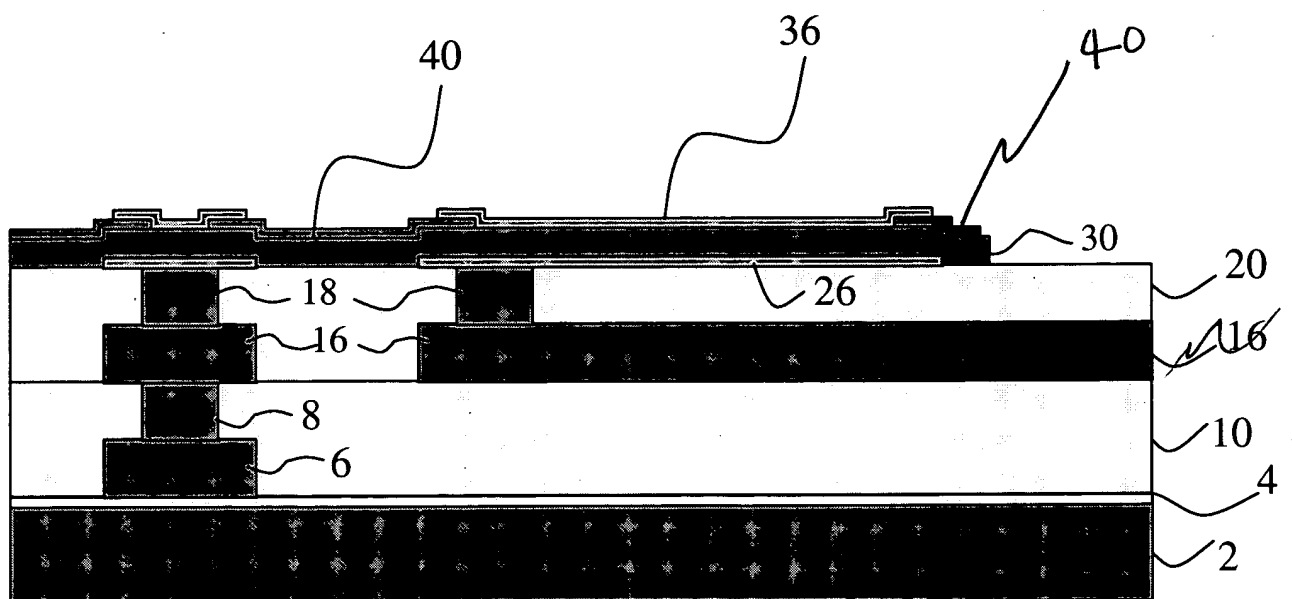


Figure 14

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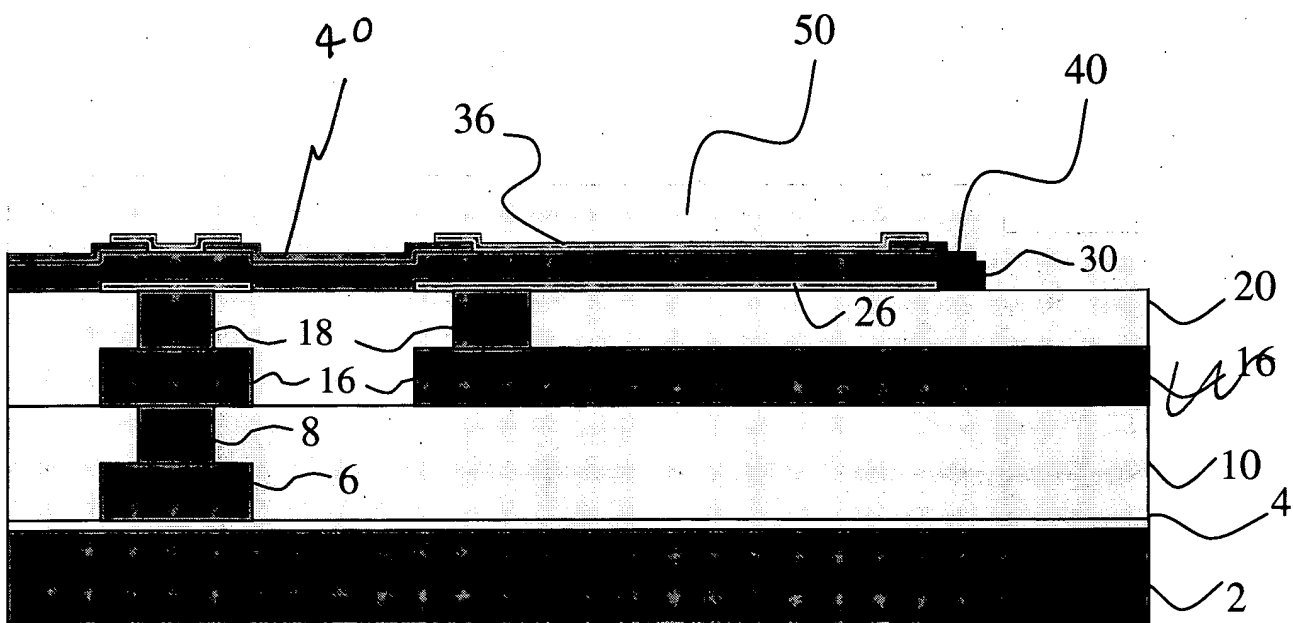


Figure 15

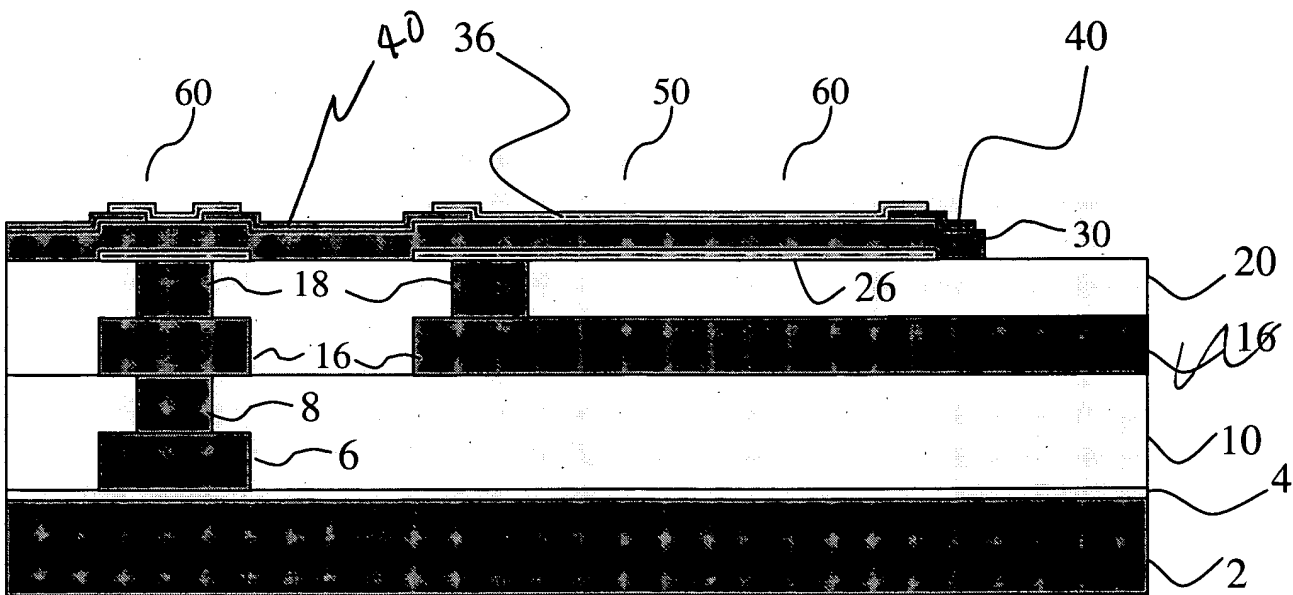


Figure 16

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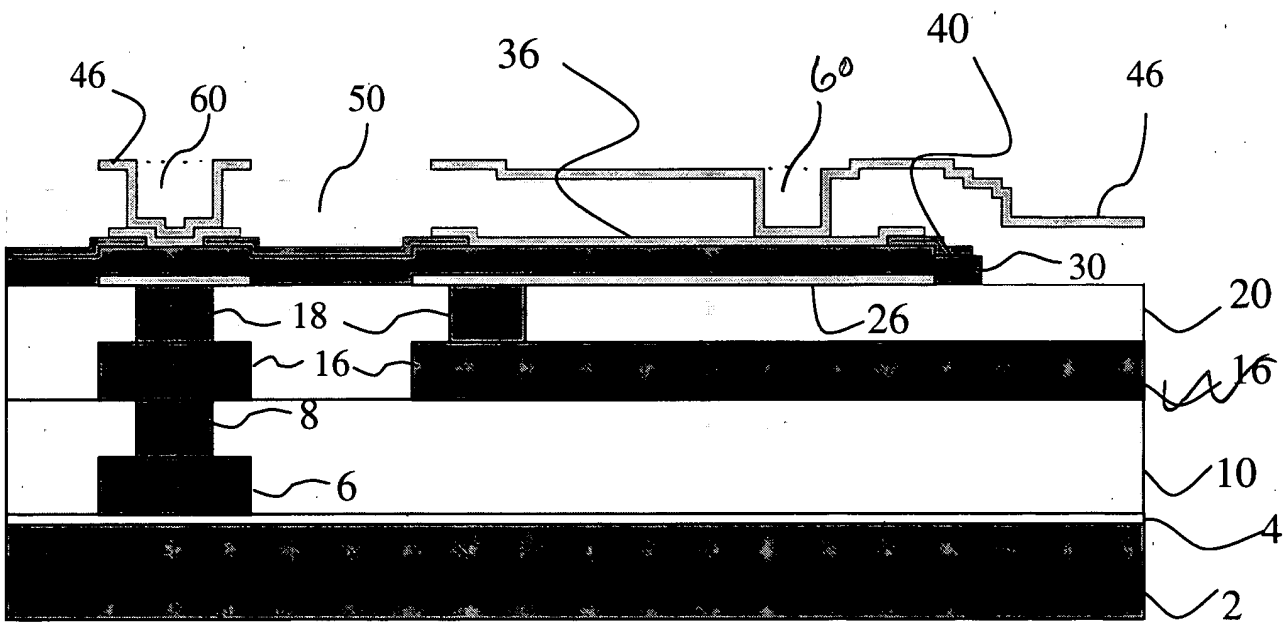


Figure 17

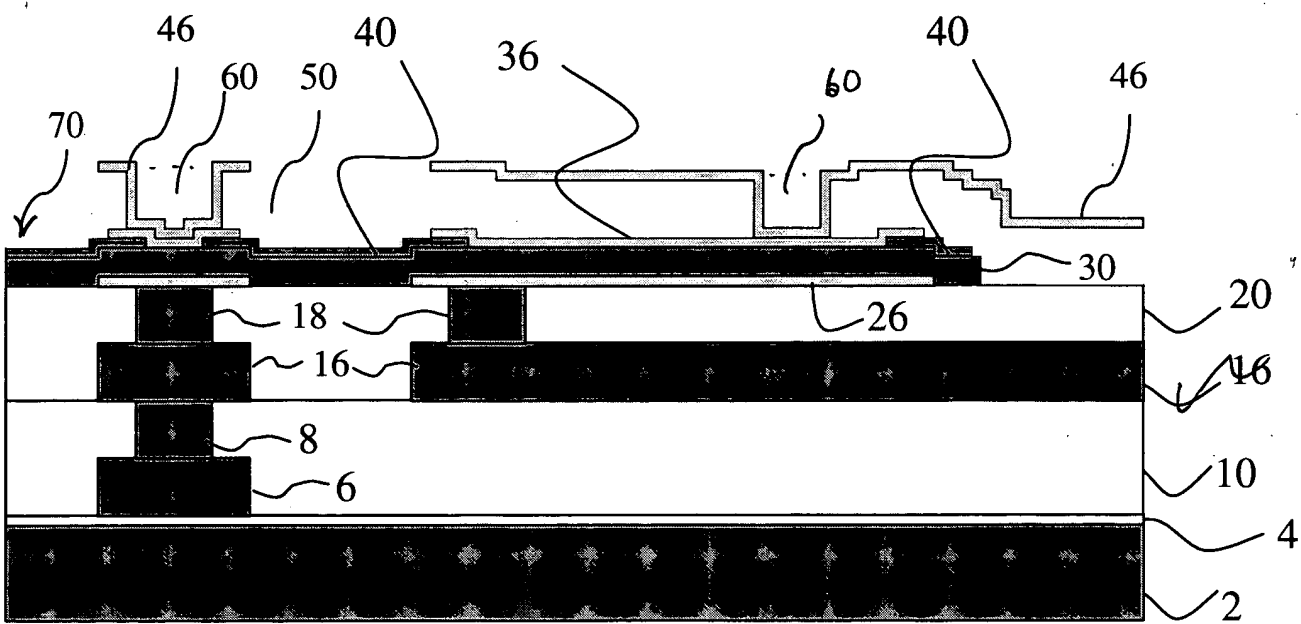


Figure 18

ANNOTATED SHEET

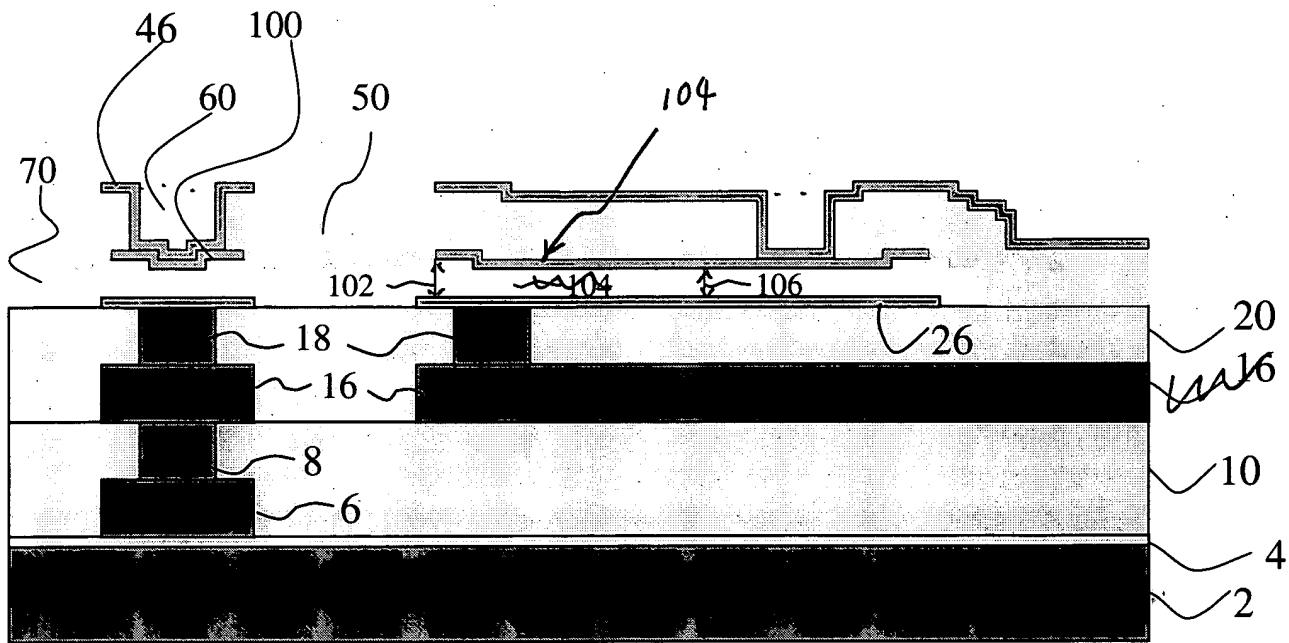


Figure 19